

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVITY 3 - Advanced Technology Development				PE NUMBER AND TITLE 0603211F Aerospace Structures				PROJECT 486U		
COST (\$ In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
486U Advanced Aerospace Structures	9,593	12,411	13,749	15,182	16,379	17,549	19,092	18,265	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description:** This Advanced Technology Development program develops and demonstrates affordable aerospace vehicle structures by utilizing innovative metallic and composite structures technologies to reduce the cost of airframe ownership. Innovative structural concepts integrate these two types of materials with design and monitoring techniques to develop and demonstrate solutions and repairs for corrosion fatigue, multi-site damage fatigue, and other damage to which aging aircraft are susceptible. The goal of this program is to develop technologies to restore structural integrity, extend life, and improve survivability of the current fleet, and future fleet of manned and unmanned aerospace vehicles. The results are less maintenance intensive, more durable, and more dependable structures for current and future aerospace systems. This yields lower cost of ownership (by delaying acquisition and by reducing support and maintenance costs), restored and improved sortie rates (due to durability, damage or threat tolerance, and design for supportability), and reduced observability (both radar cross section and infrared). The increased funding in this PE is due to the increased emphasis by the Air Force on advanced structures for space applications.

(U) **FY 1998 (\$ in Thousands):**

- (U) \$3,923 Developed and assessed processes for the replacement of corrosion sensitive components with the completion of a wing spar for flight test to extend the structural life of aircraft.
- (U) \$1,302 Developed and demonstrated durability and performance of manned and unmanned aerospace vehicles structures operating in extreme thermal and acoustic environments, which resulted in a detailed design of an integrated aft fuselage and nozzle section and, thereby, decreasing vulnerability and longevity of aerospace vehicles.
- (U) \$4,368 Developed advanced structural concepts and design methods for future and existing aerospace vehicles which identified new design criteria for composite structures and design of sandwich structure component; these technologies were developed to maintain the Air Force's technology edge.
- (U) \$9,593 Total

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(U) FY 1999 (\$ in Thousands):

- (U) \$5,700 Improve durability and performance, affordability, and longevity of existing aging aircraft and future aerospace vehicle structures operating in extreme thermal and acoustic environments to decrease vulnerability and increase longevity of aerospace vehicles with the fabrication of an integrated aft fuselage and nozzle section.
- (U) \$5,886 Develop advanced structural concepts and design methods for future and existing air vehicles, such as the fabrication of a full-scale structural component for demonstration or flexible wing demo that twists to control flight.
- (U) \$461 Develop and apply new analysis methods and design criteria to advanced composite structures for reduction in life cycle costs of current and future aerospace vehicles by maximizing the use of composite structures.
- (U) \$364 Identified as a source for SBIR.
- (U) \$12,411 Total

(U) FY 2000 (\$ in Thousands):

- (U) \$7,420 Improve durability and performance, affordability, and longevity of existing aging aircraft and future aerospace vehicle structures operating in extreme thermal and acoustic environments to decrease vulnerability and increase longevity of aerospace vehicles with the fabrication of an integrated aft fuselage and nozzle section.
- (U) \$5,844 Develop advanced structural concepts and design methods for future and existing aerospace vehicles, such as the fabrication of a full-scale structural component for demonstration or flexible wing demo that twists to control flight.
- (U) \$485 Develop and apply new analysis methods and design criteria to advanced composite structures for reduction in life cycle costs of current and future aerospace vehicles by maximizing the use of composite structures.
- (U) \$13,749 Total

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<p>(U) <u>FY 2001 (\$ in Thousands):</u></p> <ul style="list-style-type: none"> – (U) \$8,211 Improve durability and performance, affordability, and longevity of existing aging aircraft and future aerospace vehicle structures operating in extreme thermal and acoustic environments to decrease vulnerability and increase longevity of aerospace vehicles with the fabrication of an integrated aft fuselage and nozzle section. – (U) \$6,436 Develop advanced structural concepts and design methods for future and existing aerospace vehicles, such as the fabrication of a full-scale structural component for demonstration or flexible wing demo that twists to control flight. – (U) \$535 Develop and apply new analysis methods and design criteria to advanced composite structures for reduction in life cycle costs of current and future aerospace vehicles by maximizing the use of composite structures. – (U) \$15,182 Total <p>(U) B. Budget Activity Justification: This program is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies for existing system upgrades and/or new system developments that have military utility and address warfighter needs.</p>		
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<p>(U) C. <u>Program Change Summary (\$ in Thousands):</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;"></th> <th style="width: 10%; text-align: center;"><u>FY 1998</u></th> <th style="width: 10%; text-align: center;"><u>FY 1999</u></th> <th style="width: 10%; text-align: center;"><u>FY 2000</u></th> <th style="width: 10%; text-align: center;"><u>FY 2001</u></th> <th style="width: 10%; text-align: center;"><u>Total Cost Cont</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget/FY 1999 PB</td> <td style="text-align: right;">9,734</td> <td style="text-align: right;">12,494</td> <td style="text-align: right;">14,435</td> <td style="text-align: right;">15,041</td> <td></td> </tr> <tr> <td>(U) Appropriated Value</td> <td style="text-align: right;">10,423</td> <td style="text-align: right;">12,494</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">a. Congressional/General Reductions</td> <td style="text-align: right;">-437</td> <td style="text-align: right;">-83</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">b. SBIR</td> <td style="text-align: right;">-227</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">c. Omnibus/Other Above Threshold Reprogrammings</td> <td style="text-align: right;">-66</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">d. Below Threshold Reprogrammings</td> <td style="text-align: right;">-100</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Year Since FY1999 PB</td> <td></td> <td></td> <td style="text-align: right;">-686</td> <td style="text-align: right;">141</td> <td></td> </tr> <tr> <td>(U) Current Budget Submit/FY 2000 PB</td> <td style="text-align: right;">9,593</td> <td style="text-align: right;">12,411</td> <td style="text-align: right;">13,749</td> <td style="text-align: right;">15,182</td> <td style="text-align: center;">Cont</td> </tr> </tbody> </table> <p>(U) Significant Program Changes: Not Applicable.</p> <p>FY 1999: \$364 identified as a source for SBIR.</p>							<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost Cont</u>	(U) Previous President's Budget/FY 1999 PB	9,734	12,494	14,435	15,041		(U) Appropriated Value	10,423	12,494				(U) Adjustments to Appropriated Value						a. Congressional/General Reductions	-437	-83				b. SBIR	-227					c. Omnibus/Other Above Threshold Reprogrammings	-66					d. Below Threshold Reprogrammings	-100					(U) Adjustments to Budget Year Since FY1999 PB			-686	141		(U) Current Budget Submit/FY 2000 PB	9,593	12,411	13,749	15,182	Cont
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<p>(U) D. <u>Other Program Funding Summary:</u></p> <p>(U) <u>Related Activities:</u></p> <ul style="list-style-type: none"> – (U) PE 0603245F, Flight Vehicle Technology Integration. – (U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication. <p>(U) E. <u>Acquisition Strategy:</u> Not Applicable.</p> <p>(U) F. <u>Schedule Profile:</u> Not Applicable.</p>		
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